

Claims

1. Shut-off instrument (1) for a flow medium, in particular a slide valve instrument (2) designed for pressurization on both sides, with an instrument housing (3) forming a flow channel (6) and a slide valve chamber (11) and with a soft-sealing shut-off element (23) closing off the flow channel (6) and with a slide valve stem (16) which penetrates a seal arrangement (14) and/or bearing arrangement (15) in a housing neck extension (12) delimiting the slide valve chamber (11) and which is rotationally connected to a stem nut (19) coupled to the shut-off element (23) by a screw contact, characterised in that the shut-off element (23) is designed to comprise multiple parts and at least one external dimension (29) of the main body (28) is slightly smaller than a nominal width (9) of the flow channel (6) and seal elements (34) are arranged on opposite support surfaces (32) of the main body (28) via an engaged connection projecting over the external dimension (29) with a peripheral edge collar (35).
2. Shut-off instrument according to claim 1, characterised in that in the housing neck extension (12) sealing surfaces (38) are arranged which mount the sealing and/or bearing arrangement (14, 15) and are concentric to a longitudinal middle axis (24) of the slide valve stem (16), which seal surfaces are designed to widen conically from a base of the housing neck extension (12) in the direction of an end face (70) of the housing neck extension (12).
3. Shut-off instrument according to claim 1 or 2, characterised in that the instrument housing (3) is designed to be in one piece with the housing neck extension (12).
4. Shut-off instrument according to claim 1 or 2, characterised in that the instrument housing (3) is designed to comprise multiple parts with the housing neck extension (12).
5. Shut-off instrument according to one or more of the preceding claims, characterised in that the instrument housing (3) is designed to be divided in the region of the slide valve chamber (11) in a plane running perpendicular to the longitudinal middle axis (24) of the slide valve stem (16).

6. Shut-off instrument according to claim 4, characterised in that the instrument housing (3) is designed to be divided in a division plane (90) following the longitudinal middle axis (24) of the slide valve stem (16) and a middle axis (25) of the flow channel (6).
7. Shut-off instrument according to claim 4, characterised in that the instrument housing (3) is designed to be divided in a division plane (91) following the longitudinal middle axis (24) and running perpendicular to the middle axis (25).
8. Shut-off instrument according to claim 4, characterised in that the instrument housing (3) is designed to be divided in a division plane (92) following the middle axis (25) and running perpendicular to the longitudinal middle axis (24).
9. Shut-off instrument according to one or more of the preceding claims, characterised in that the housing parts of the instrument housing (3) are detachably connected by a flange arrangement (87) formed in a region of a division plane (90, 91, 92).
10. Shut-off instrument according to one or more of the preceding claims, characterised in that in the slide valve chamber (11) guides (56) running parallel to the longitudinal middle axis (24) are arranged for preventing the twisting of the stem nut (19).
11. Shut-off instrument according to claim 10, characterised in that the guides (56) are designed by depressions in the slide valve chamber (11) of the instrument housing (3) that are diametrically opposite one another in relation to the longitudinal middle axis and groove-shaped.
12. Shut-off instrument according to claim 10, characterised in that the guides (56) are in the form of guide strips in the slide valve chamber (11) of the instrument housing (3) that are diametrically opposite one another in relation to the longitudinal middle axis (24).
13. Shut-off instrument according to one or more of the preceding claims, characterised in that the stem nut (19) is mounted so as to be secure against twisting by means of guide extensions in the groove or strip-like guides (56) that are diametrically opposite one an-

other in relation to the longitudinal middle axis (24).

14. Shut-off instrument according to one or more of the preceding claims, characterised in that the stem nut (19) is provided with coupling means (31) which lie diametrically opposite to the longitudinal middle axis (24) and engage in coupling grooves (30) of the main body (28).

15. Shut-off instrument according to one or more of the preceding claims, characterised in that at an end position of the stem nut (19) corresponding to the shut position the coupling means (31) project over the slide valve chamber (11) in the direction of the flow channel (6).

16. Shut-off instrument according to one or more of the preceding claims, characterised in that the main body (28) is in the shape of a disc and in the direction of an external dimension (29) is penetrated by a mounting bore (45) receiving the slide valve stem (16).

17. Shut-off instrument according to one or more of the preceding claims, characterised in that the main body (28) is in the form of a hollow body (121) or wall discs (117, 118) connected by wall sections (119) and spacer sleeves (120).

18. Shut-off instrument according to one or more of the preceding claims, characterised in that the main body is provided with at least one flattened section (123) which lies in a plane running perpendicular to the longitudinal middle axis (24).

19. Shut off instrument according to one or more of the preceding claims, characterised in that in the region of the flattened section (123) in the main body (28) a compensating element (127) is arranged which is secured preferably via a plug and socket connection (126).

20. Shut off instrument according to one or more of the preceding claims, characterised in that the main body (28) is secured against twisting in a guide arrangement (51) extending linearly to an adjustment direction in the instrument housing (3).

21. Shut-off instrument according to one or more of the preceding claims characterised in that the guide arrangement (51) is formed by guide elements (50, 97) laterally projecting over an external outline of the main body (28) and guide webs (49) in the instrument housing (3) which run parallel to the longitudinal middle axis (24) and are diametrically opposite one another.
22. Shut-off instrument according to one or more of the preceding claims, characterised in that the guide webs (49) are arranged in the region of housing shapings (37) outside a flow cross section (8) of the flow channel (9).
23. Shut-off instrument according to claim 20, characterised in that the guide arrangement (51) is formed in the instrument housing (3) for the guide elements (50, 97) projecting laterally over the main body (28) by guide webs (49) or guide grooves (96) running parallel to the longitudinal middle axis (24) and diametrically opposite one another.
24. Shut-off instrument according to one or more of the preceding claims, characterised in that the guide elements (50, 97) cooperating with the guide webs (49) or guide grooves (96) are secured in the main body (28).
25. Shut-off instrument according to one or more of the preceding claims, characterised in that the guide elements (50, 97) are connected in one piece with the main body (28).
26. Shut-off instrument according to one or more of the preceding claims, characterised in that the seal elements (34) are connected with the support discs (40) and the guide elements (50) preferably by securing means (41), e.g. a spacer screw, arranged in a main body middle plane running perpendicular to the longitudinal middle axis (24).
27. Shut-off instrument according to one or more of the preceding claims, characterised in that the seal elements (34) are penetrated by the securing means (41) in bores (42), whereby the bores (42) are designed to be pressure-tight with the securing means (41).
28. Shut-off instrument according to one or more of the preceding claims, characterised

in that a sealing collar (107) surrounding the bore (42) is arranged on the sealing element (34).

29. Shut-off instrument according to one or more of the preceding claims, characterised in that in order to mount the sealing collar (107) in the main body (28) a mount (108) encompassing the bore (42) is arranged for the sealing collar (107).

30. Shut-off instrument according to one or more of the preceding claims, characterised in that the sealing arrangement (14) for the slide valve stem (16) in the housing neck extension (12) comprises a seal carrier (61) comprising an inner and outer seal, e.g. O-rings (64, 65), and surrounding a stem projection (17).

31. Shut-off instrument according to one or more of the preceding claims, characterised in that the inner and outer seal is preferably in the form of a pairwise arrangement of O-rings (64, 65).

32. Shut-off instrument according to one or more of the preceding claims, characterised in that the seal carrier (61) is positioned in the housing neck extension (12) by means of a bayonet-locking device.

33. Shut-off instrument according to one or more of the preceding claims, characterised in that an extension of the seal carrier (61) mounting the external seal projection forms a conical seal projection.

34. Shut-off instrument according to one or more of the preceding claims, characterised in that the bayonet locking device of the seal carrier (61) in the housing neck extension (12) is formed by locking elements (77) projecting diametrically over an external diameter of the seal carrier (61) and mounting grooves (78) allocated to the locking elements (77) in a mounting bore (67) of the housing neck extension (12).

35. Shut-off instrument according to one or more of the preceding claims, characterised in that the seal carrier (61) in the housing neck extension (12) is prevented from twisting

by at least one flanged nose (116).

36. Shut-off instrument according to one or more of the preceding claims, characterised in that in the housing neck extension (12) a bearing arrangement (15) is provided for the rotatable bearing of the slide valve stem (16).

37. Shut-off instrument according to one or more of the preceding claims, characterised in that the slide valve stem (16) preferably has a bearing flange (57) in the region of the bearing arrangement (15).

38. Shut-off instrument according to one or more of the preceding claims, characterised in that the bearing flange (57) is formed by a annular collar with a triangular cross section projecting over a stem diameter (109).

39. Shut-off instrument according to one or more of the preceding claims, characterised in that in the mounting bore (67) of the housing neck extension (12) for the stem bushing (13) a bearing sleeve (59) is arranged, provided with a bearing flange (58) for mounting the bearing flange (57).

40. Shut-off instrument according to one or more of the preceding claims, characterised in that a face seal ring (60) is arranged between the bearing collar (57) and the seal carrier (61).

41. Shut-off instrument according to one or more of the preceding claims, characterised in that bearing means of the bearing arrangement (15) for the slide valve stem (16) are formed by a bearing layer applied to bearing points in the housing neck extension (12)

42. Shut-off instrument according to one or more of the preceding claims, characterised in that at the end section of the housing neck extension (12) enclosing the stem projection (17) a neck ring (73) is arranged which is secured in the housing neck extension (12) and penetrated by the stem projection (17).

43. Shut-off instrument according to one or more of the preceding claims, characterised in that the main body (28) of the shut-off element (23) is made of metal, plastic or high-temperature resistant materials and/or materials that are resistant to aggressive media.
44. Shut-off instrument according to one or more of the preceding claims, characterised in that the seal element (34) is made of elastomers, plastic or high-temperature resistant materials and/or materials that are resistant to aggressive media.
45. Shut-off instrument according to one or more of the preceding claims, characterised in that the support ring (40) is made of metal, plastic or high-temperature resistant materials and/or materials that are resistant to aggressive media.
46. Shut-off instrument according to one or more of the preceding claims, characterised in that the stem nut (19) is made of metal, plastic or high-temperature resistant materials and/or materials that are resistant to aggressive media.
47. Shut-off instrument according to one or more of the preceding claims, characterised in that the slide valve stem (16) is made of metal, plastic or high-temperature resistant materials and/or materials that are resistant to aggressive media.
48. Shut-off instrument according to one or more of the preceding claims, characterised in that the seal carrier (61) is made of metal, plastic or high-temperature resistant materials and/or materials that are resistant to aggressive media.
49. Shut-off instrument according to one or more of the preceding claims, characterised in that the instrument housing (3) is made of metal, plastic or high-temperature resistant materials and/or materials that are resistant to aggressive media.
50. Shut-off instrument according to one or more of the preceding claims, characterised in that the locking position of the shut-off element (23), in which the seal elements (34) lie against the sealing surfaces (38) of the instrument housing (3), is formed by a stop arrangement (81) between the slide valve stem (16) and the main body (28) of the shut-off

element (23), in particular by a detent ring (83) secured to the end section of the slide valve stem (16), which delimits the movement of the threaded stem (16).

51. Shut-off instrument according to one or more of the preceding claims, characterised in that the edge collar (35) of the sealing element (34) is designed to have sealing lips (100, 101).